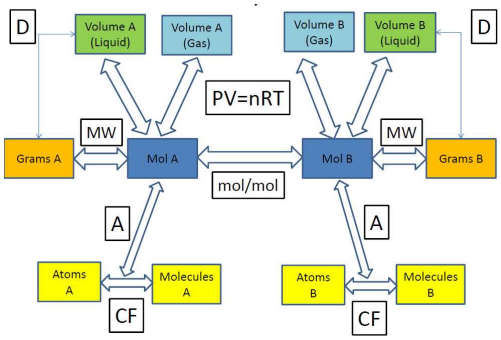
C101 - Study Guide - Ch 12 - F17

1. General Properties of Gases (Ch 1 Review)
   (a) Indefinite Shape/Volume - gases will fill any container completely
   (b) Particles far apart/easily compressed
   (c) Particles do not interact (IMF << Energy/Temperature)
   (d) All gasses behave the same, therefore can be described by only 4 variables.
   (e) 1 mol gas = 22.4 L (at 0 ℃ and 1 atm)
2. Know Variables, Standard Units and Alternative Units (Ch 2 Review)
   (a) P - Pressure - atm - mmHg, torr, PSI (lb/in^2), Pa
   (b) V - Volume - L - mL, gallons
   (c) n - number of mols - grams, mL, atoms/molecules
   (d) R - Gas Constant (not really a variable!)
   (e) T - Temperature - K - ℃
3. Inversely Proportional (IP) vs Directly Proportional (DP)
4. Gas Laws (names not required, but concepts are)
   (a) Boyle's Law - P $\propto$ 1/V (constant n,T) - $P_1V_1 = P_2V_2$ - IP
   (b) Charle's Law - V $\propto$ T (constant P,n) - $\frac{V_1}{T_1} = \frac{V_2}{T_2}$ - DP
   (c) Gay-Lussac's Law - P $\propto$ T (constant V,n) - $\frac{P_1}{T_1} = \frac{P_2}{T_2}$ - DP
   (d) Avagadro's Law - V $\propto$ n (constant T,P) - $\frac{V_1}{n_1} = \frac{V_2}{n_2}$ - DP
5. Cheat and ignore the above and instead learn the Ideal Gas Law below!
6. Formula's and when to use them
   (a) PV=nRT - Ideal Gas Law - use when only 1 set of conditions exists
   (b) $\frac{P_1V_1}{n_1T_1} = \frac{P_2V_2}{n_2T_2}$ - comparison form when two conditions exist with one or more variables changed
   (c) mol/mol ratio and Chapter 9 type problems - when you have 2 compounds in a problem and/or a chemical reaction is used.



7. The chapter review in the book is useful